CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended). ~~An~~ A sensor head including:

a sensor head for measuring a penetration depth of a proton beam in tissue;

the sensor head including an inorganic scintillating mixture comprising at least a first and a second component each having a characteristic behavior in response to an irradiation with charged particles, showing a typical Bragg peak with respect to a relative depth dose; said first component having a quenching characteristic in a Bragg peak region and said second component showing an increased efficiency in the Bragg peak region, both being related to a reference curve for a relative dose.

Claim 2 (currently amended). The ~~inorganic scintillating mixture~~ sensor head according to claim 1, comprising as the first component ~~Gadolinium-Oxy-Sulfid~~ Gadolinium-Oxy-Sulfide (Gd_2O_2Tb) and as the second component ~~Zinc-Cadmium-Sulfid~~ Zinc-Cadmium-Sulfide (Zn,Cd)S:Ag.

Claim 3 (currently amended). The ~~inorganic scintillating mixture~~ sensor head according to claim 2, wherein a content of Gd_2O_2S:Tb is in a range of 60 to 90% wt and a content of (Zn,Cd)S:Ag is in a range of 10 to 40% wt.

Claim 4 (currently amended). The ~~inorganic scintillating mixture~~ sensor head according to claim 3, wherein the content of Gd_2O_2S:Tb is in the range of 75 to 85% wt and the content of (Zn,Cd)S:Ag is in the range of 15 to 25% wt.

Claim 5 (currently amended). ~~An~~ A sensor head including:

a sensor head for measuring a penetration depth of a proton beam in tissue;

the sensor head including an inorganic scintillating mixture comprising at least a first[[,]] and a second ~~and a third~~ component, wherein the first and the second components have a characteristic behavior in response to an irradiation with charged particles showing a typical Bragg peak with respect to a relative depth dose; said first component having a quenching characteristic in a Bragg peak region and said second component showing an increased efficiency in the Bragg peak region in comparison to a reference curve for a relative dose ~~and said third component having a binder characteristic in order to hold the first and the second component in a desired mechanical shape~~ the first and the second components being held together.

Claim 6 (currently amended). The ~~inorganic scintillating mixture~~ sensor head according to claim 5, comprising as the first component ~~Gadolinium-Oxy-Sulfid~~ Gadolinium-Oxy-Sulfide (Gd_2O_2S:Tb), as the second component ~~Zinc-Cadmium-Sulfid~~ Zinc-Cadmium-Sulfide (Zn,Cd)S:Ag, and ~~as the third component~~ further comprising an optical cement having a binder characteristic holding the first and the second component in a desired mechanical shape.

Claim 7 (currently amended). The ~~inorganic scintillating mixture~~ sensor head according to claim 6, wherein a content of the optical cement is in a range of 20 to 60% wt, a content of Gd_2O_2S:Tb is in a range of 30 to 60% wt and a content of (Zn,Cd)S:Ag is in a range of 05 to 30% wt.

Claim 8 (currently amended). The ~~inorganic scintillating mixture~~ sensor head according to claim 7, wherein the content of the optical cement is in the range of 35 to 45% wt, the content of Gd_2O_2S:Tb is in the range of 43 to 53% wt and the content of (Zn,Cd)S:Ag is in the range of 07 to 17% wt, preferably 40 resp. 48 resp. 12% wt.

Claim 9 (withdrawn). A sensor assembly for charged particle dosimetry, comprising a three-dimensional array of sensor heads, each sensor head being located on one end of an optical fiber, an opposite end of the optical fiber being associated with an optical light intensity measuring assembly, each sensor head and at least partially the optical fiber are inserted into a respective cavity located in a holder member.

Claim 10 (withdrawn). The sensor assembly according to claim 9, wherein the holder member is a substantially cylindrical shaped organic body; said cavity is oriented along a longitudinal axis and has a depth aligned with a desired sensor head position in said three-dimensional array.

Claim 11 (withdrawn). The sensor assembly according to claim 9, wherein the holder members are attached in a holder block generating a regular pattern of the sensor heads as seen in a direction parallel to a longitudinal axis of the holder members .

Claim 12 (withdrawn). The sensor assembly according to claim 11, wherein the regular pattern is a hexagonal pattern allowing to accommodate a sensor heads relative to adjacent sensor heads in an equidistant manner.

Claim 13 (withdrawn). The sensor assembly according to claim 11. wherein the holder block is related with a stopper member being disposed opposite to the holder block assuring that each tip of the holder member is oriented with a distinct distance from the holder block as seen along the longitudinal axis of the holder members.

Claim 14 (withdrawn). The sensor assembly according to claim 9, wherein the holder member comprises an annular notch being associated with a sealing ring disposed in the holder block or on the notch.

Claim 15 (withdrawn). The sensor assembly according to claim 9, wherein the sensor head has a cylindrical shape and comprises a mixture containing optical cement, Gd_2O_2S:Tb and (Zn,Cd)S:Ag.

Claim 16 (withdrawn). The sensor assembly according to claim 15, wherein the sensor head has a diameter in a range of 1 to 5 mm and a height in a range of 1 to 5 mm.

Claim 17 (withdrawn). The sensor assembly according to claim 15, wherein a surface of the sensor head opposite to a surface connected to the optical fiber is layered with a reflexion film.

Claim 18 (withdrawn). The sensor assembly according to claim 9, wherein the three-dimensional array is disposed in a cuboid sensor volume in a manner that the sensor head positions are defined in a plane substantially parallel to a (111)-plane in a crystal having a cuboid pattern.

Claims 19-21 (canceled).